

THE ENVIRONMENTAL SCIENCES PHD  
PROGRAM

## NEWSLETTER

SPRING 2016

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## FROM THE DIRECTOR'S DESK

Welcome to the inaugural edition of the Environmental Sciences PhD Program Newsletter. Our plan is to use this forum to showcase the good work and accomplishments of our students and faculty, to share alumni news, and to announce major program developments. In this edition, I am pleased to share news of our 29th program graduate, Chad Rigsby, to introduce the six new students who joined us in the past year, and to share some research and service awards that our students have earned.

In order to utilize this forum most effectively, we need your help. Please keep us updated with any news you may have to report as well as changes of address, email addresses and other ways of contacting you. We are proud of the accomplishments of our current and former program associates, and we'd like to spread the news as effectively as possible.

We hope that you enjoy this edition of our newsletter, and please stay tuned for more!



**Don Cipollini**  
Director  
ES PhD Program

## CHAD RIGSBY DEFENDS DISSERTATION

## "MECHANISMS OF ANTIXENOSIS AND ANTIBIOSIS OF ASH TO EMERALD ASH BORER"



The outbreak of invasive forest insects is thought to result from the existence of defense-free space stemming from a lack of a shared co-evolutionary history between the insect and its novel hosts. In my research, we've identified and characterized the resistance mechanisms of a resistant, co-evolved host to emerald ash borer (EAB), an invasive devastating forest pest in North America, and have therefore gained insight into how native North American ashes are unable to defend themselves against the borer. We have found that the co-evolved host has characteristics that result in EAB preferring not to use it as a

host, traits which our North American ashes lack. Additionally, we also found that defense-associated enzymes are significantly more active in the co-evolved host than North American ashes, specifically oxidative enzymes that cause damage to biomolecules (e.g. DNA, proteins, etc...) in the gut of the insect. These findings will be applied to the development of resistant varieties of ash so that these trees can be replanted in the landscape.

-Chad Rigsby

*[Chad was advised by Don Cipollini, and has recently accepted a postdoctoral position at the University of Rhode Island]*

## JUSTYNA HAMPEL

I am from Lodz, Poland. I did my undergrad at WSU in Biological Sciences. I started my MS in EES in August of 2014 but switched to the PhD program this winter. I work with Dr. Silvia Newell and my work is on the nitrogen cycle and the microbial community structure in hypereutrophic

Lake Taihu, China. My passion outside of school is swimming. I swam competitively since I was 6 and my last 4 years of swimming were on the WSU swimming and diving team.

*Justyna is advised by Silvia Newell*



## DANIEL HOFFMAN

Daniel graduated magna cum laude from Kennesaw State University with a Bachelor of Science in Biology in 2015. He has presented his Honors thesis work, "Comparing nitrogen transformation rates in vegetated and unvegetated sediments of St. Joseph Bay, FL", at meetings of the Association of Southeastern Biologists (ASB) in 2013, the Coastal and Estuarine Research Federation (CERF) in 2013, and the Association for the Sciences of Limnology and Oceanography

(ASLO) in 2015. In continuing to explore the effects of anthropogenic activity on the nitrogen cycle, Daniel's Ph.D. work focuses on examining ammonium cycling dynamics in Lake Erie and the competition between nitrifiers and harmful algal blooms, with the goal to contribute to management and remediation efforts. Outside of the lab, Daniel enjoys live music, craft beer, and (occasionally) sleep.

*Daniel is advised by Silvia Newell*



## LEON KATONA

is a Michigan native and was raised in the state's remote Upper Peninsula. His Master's research at Northern Michigan University investigated the impacts of habitat and wave action on benthic diatom communities in Lake Superior. He is working with Dr. Yvonne Vadeboncoeur at Wright State and will begin work in Lake Erie this summer. His research interests include assessing differences

between benthic and planktonic primary productivity in fresh water, the ecology of large lakes and the taxonomy and unique photo-physiology of benthic algae. Before he pursued graduate studies, he was a gourmet food caterer and an urban agriculture intern. In his spare time he creates visual and audio collages.

*Leon is advised by Yvonne Vadeboncoeur*



**MICHELE MILLER**

My research interests include the Ebola virus, specifically misconceptions about it and prevention in spreading it, and helping prevent epidemics, pandemics, and biological warfare. I received a BS in Biology at the University of Indianapolis, and am currently completing my last semester of a Master's in Microbiology and Immunology. My thesis for my masters is to determine what misconcep-

tions college students have about Ebola and if there is a difference in misconceptions between biology majors and non-biology majors. I am also taking my last class to be certified for chemical, biological, radiological, and nuclear defense. I plan to continue my Ebola research in this program and hope to one day work for the CDC.

*Michelle is advised by Will Romine*

**JUAN MANUEL PERILLA LOPEZ**

Manuel is a Colombian agronomist and entomologist, interested in flies ecology and taxonomy, specially gall midges and tachinids. His interests for insects started during my undergraduate studies in Agronomy at the National University of Colombia. After some jobs in tropical fruits production and insects surveillance in Colombia, I focused on flies, learning about tritrophic relationships among

parasitoid wasps, gall midges and grasses in his MS degree at South Dakota State University. In addition to all things natural science, my interests include reading and outdoor activities, like hiking, cycling and rock climbing.

*Juan Manuel is advised by John Stireman*

**DONNIE PETERSON**

I was born and raised in Black River Falls, Wisconsin. I did my undergraduate in Forest ecology and restoration at University of Wisconsin Stevens Point. Moved to Indiana to attend Purdue University, where I earned my Master's in Entomology. I worked on emerald ash borer and its larval

performance on blue ash. I am working with Don on emerald ash borer and its new host white fringetree. I like to travel (spent four months backpacking across Europe last Spring and Summer). I spend my time running and playing board games.

*Donnie is advised by Don Cipollini*





**Send us your submissions!**

**ENVIRONMENTAL SCIENCES  
PHD PROGRAM**

114 Biological Sciences I  
3640 Colonel Glenn Hwy  
Dayton, OH 45435

Phone: 937-775-3273

Fax: 937-775-348

Email: [kim.napier@wright.edu](mailto:kim.napier@wright.edu)

<https://science-math.wright.edu/environmental-sciences-phd>



**PROGRAM HIGHLIGHTS**

- Allen Hunt co-authors "Networks on Networks: The Physics of Geobiology and Geochemistry"
- Don Cipollini awarded USDA-APHIS funding for work on emerald ash borer
- Mark McCarty, Silvia Newell and Yvonne Vadeboncoeur all receive grants from Ohio SeaGrant for work on impaired waterways
- Jacquelyn Bracco named Graduate Excellence Award winner
- Behzad Ghanbarian receives the Donald L. Turcotte award for best dissertation from the American Geophysical Union

**ROBERSON WINS PRESENTATION AWARD**

Libby Roberson was awarded Third Place for outstanding presentation of entomological research in the PhD student competition at a meeting of the North Central Branch of the Entomological Society of America meeting in Cleveland. Her talk in the Systematic, Evolution, and Biodiversity section was entitled "Burning bush (*Euonymus alatus*) and deer alter spider assemblages". Libby is advised by Don Cipollini.



**ALUMNI NOTES**

**KATHRYN MORRIS (BARTO) '08**

Dr. Morris, an assistant professor of Biology at Xavier University welcomed a new addition to her family, Aiden Evan Pryce Morris. Congratulations Kathryn on your success in both your work and family. Aiden, we will look forward to your application in 2039!

**Recent Graduates (2015-2016)**

- Shishir Adhikari joins Soft Tech
- Jacky Bracco joins Argonne National Lab as post-doc
- Sam Davis joins UC-Merced as post-doc, then Dogwood Alliance in forest sustainability
- Renalda Munubi returns to Sokoine University in Tanzania as instructor
- Adrienne Williams accepts offer as a process development engineer for SST International/Palomar Technologies
- Reza Soltanian joins Ohio State as post-doc with reservoir simulation group in the school of Earth Scienc-



**Send us your submissions!**

### **ALISON AGATHER EARNS ARTIC SERVICE MEDAL**

My project in the Arctic is part of the GEOTRACES Program, which studies the biogeochemistry of trace elements and their isotopes, and nutrients throughout the world's oceans. I study the element mercury. When a single methyl group binds to mercury, the compound has the ability to both bio accumulate and bio magnify in the food web. This has negative consequences because monomethyl mercury is a neurotoxin that humans primarily accumulate through the consumption of seafood. To better understand the risk mercury poses to humans, we need to study the distribution of its species in the ocean. This is especially important to do in the Arctic, because both

human and animal populations in the Arctic have increased blood monomethyl mercury levels compared to populations elsewhere in the world. Unfortunately, there is not a lot of off-shore mercury data in the Arctic due to the harsh conditions and the extra costs resulting from the difficult sampling conditions.

- Alison Agather (*Alison is advised by Chad Hammerschmidt*)



### **CASEY HOY DELIVERS THE WAYNE CARMICHAEL LECTURE IN ENVIRONMENTAL SCIENCES**



Dr. Casey Hoy, Kellogg Endowed Professor of Agroecosystems Management at The Ohio State University, delivered the seventh annual Wayne Carmichael lecture in April of 2016. His talk was entitled "The past, present, and future of food and agriculture". An excerpt: "Our present food and agricultural system is characterized by sophisticated management of miraculous technology, unsustainable resource use, and inequitable benefits that leave about 1 in 7 of our Ohio neighbors regularly experiencing low food security. Our future challenges, heightened by climate change impacts that are already beginning, mean a transformation in food and agriculture is needed, and it may already have begun. Let's talk about the principles of transformation that will maintain healthy agroecosystems and secure good food for all"

**Send us your submissions!**

### **CATHY KEMPF RETIRES; KIM NAPIER TAKES THE HELM**

After a 22-year career at Wright State, Cathy Kempf retired in January of 2016. Cathy served as our administrative specialist since the program's inception in 2002. Cathy was a steady influence in the program office who helped to keep things running smoothly for both our students and faculty. We thank Cathy for her numerous contributions to the program and wish her well in retirement. We also extend a special thanks to Hannah Delamatre for serving admirably as our interim administrative specialist.



As we say goodbye to Cathy, we'd like to welcome Kim Napier as our new administrative specialist:

Hi, and thank you to those who have stopped by and been so kind in welcoming me to WSU.

As a new employee I have had the opportunity to meet many new people and look forward to meeting more faculty and students in the upcoming months. Prior to my coming to WSU I previously worked at a small community bank in Waynesville for about three years. I also spent many years working as the only administrative assistant within a small private school system (k-12) which provided me with the opportunity to work with all department leads and administration to meet the objectives of the organization, therefore I am excited to be working in an academic environment again. My hope is to be of assistance to all in the ES PhD program - Kim Napier



*[Kim will also serve as administrative specialist for the Interdisciplinary Applied Science and Math Ph.D. Program]*

